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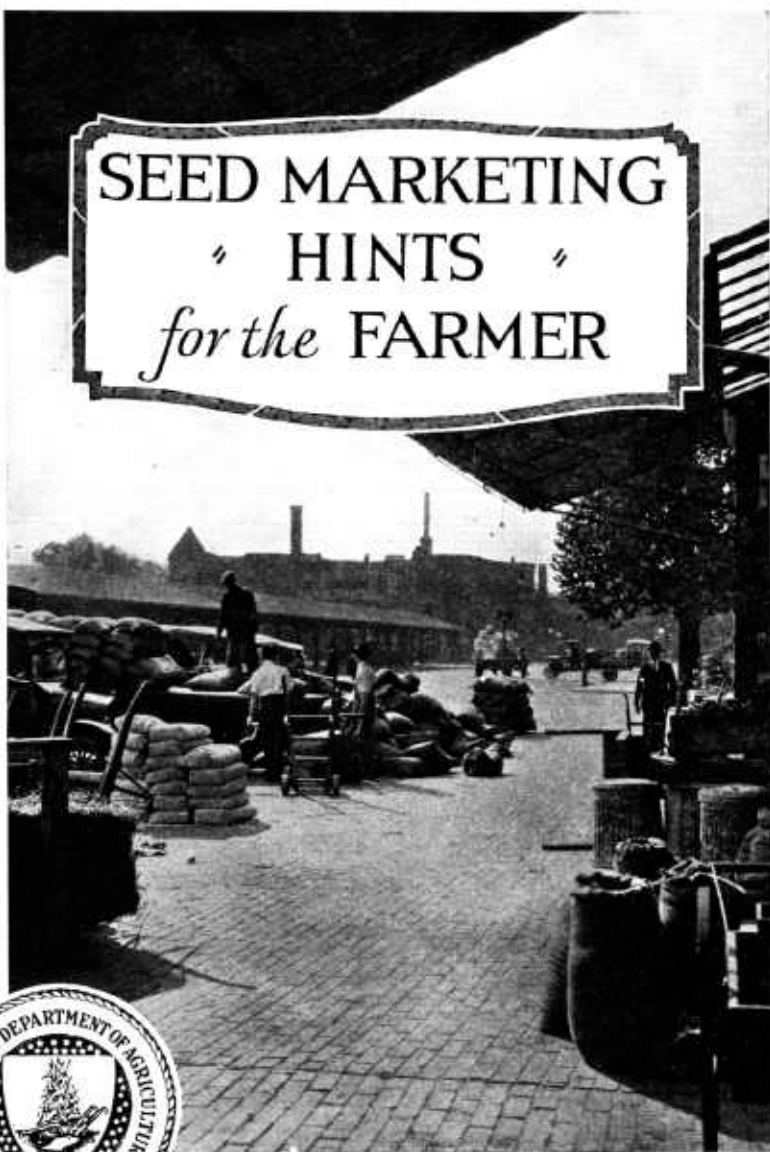
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SEED MARKETING " HINTS " *for the* FARMER



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SEED MARKETING HINTS FOR THE FARMER.

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CONTENTS.

	Page.		Page.
The importance of seeds.....	3	Selling seeds—Continued.	
Preparation of seed for market.....	5	When to sell.....	13
Thrashing.....	5	How to sell.....	13
Cleaning.....	6	Buying seeds.....	14
Sacking.....	7	General sources.....	14
Sampling.....	8	Surplus producing areas.....	14
Testing.....	8	Seedsmen.....	24
Tagging.....	9	When to buy.....	28
Storing.....	9	What to buy.....	29
Selling seeds.....	11	How to buy.....	30
Where to sell.....	11	Summary.....	30

THE IMPORTANCE OF SEEDS.

SEEDS ARE PERHAPS of more importance to the agriculture of this country than anything else the farmer handles. Nevertheless no subject in agriculture of such relative importance has been so neglected as that of seed marketing. The farmer is vitally interested in this subject because in the cycle around which seeds go from the time they are harvested until they are planted, he is both seller and buyer, or, in other words, producer and ultimate consumer.

It has been estimated that more than 14,000,000,000 pounds of seeds, exclusive of seed potatoes, seed sugar canes, and other vegetative planting stocks are sown or planted annually in this country. Even a small improvement in the quality of seeds planted would result in larger crops at little or no additional expense or in the same production on a smaller acreage. Although soil and climatic conditions beyond the farmer's control determine to a large extent the quality of seeds, a small improvement can be accomplished by means that are more or less under his control. Better thrashing and hulling, recleaning, etc., which will tend to improve the quality of seeds, will be discussed later. Better marketing methods make the seed crop more profitable and tend to recruit the ranks of the comparatively small number of farmers who make a specialty of growing field

seeds. Ordinarily the specialist, whether he be a doctor who confines himself to nervous diseases, a lawyer who confines himself to certain kinds of cases in civil law, or a farmer who each year sets aside an acreage for seed production and regards his seed crop as more than a mere side issue, is more skilled in his own particular undertaking than is the one whose interests and work are numerous and diverse. It would not be advisable for too many farmers to engage in seed production, because the supply of seeds of most agricultural crops is usually equal to or slightly in excess of the demand. Many farmers who are raising seeds could produce something else more profitably, and much seed is produced that should never be sown, but is used.

This bulletin is intended primarily to assist the mass of farmers in using better seed-selling and purchasing methods rather than to be of specific help to those farmers who specialize in seed production. To the latter, however, the general principles to be described will be quite as applicable as to the rank and file of farmers.

The question has often been asked: "Why is it that every farmer does not raise and plant his own seeds and thereby save for himself the profit others usually derive in selling him seeds?" Briefly, some of the reasons are as follows: (1) His fields may be foul with noxious weeds; (2) soil, climatic, and other conditions on his farm may be unfavorable for seed production in a given year; (3) altitude, latitude, or rainfall in his locality may preclude the production of a particular kind of seed in any year; (4) he may be able to buy better seeds at a lower cost than can be produced in his locality; (5) he may find it more profitable to grow a crop for hay or forage purposes than for seed production; (6) he may not have the facilities for harvesting, cleaning, curing, or otherwise preparing his seed for planting purposes; (7) he may need seed of a crop that has not been grown by him for several years, if ever at all; and (8) he may have to replant his fields either with the same kind of seed, his supply of which may have been exhausted with the first planting, or with seed of some catch crop.

In general, farmers obtain their seed from three sources, namely, from their own farms, from other farmers, or from dealers. The percentage that is obtained from each of these three sources varies considerably with the kind of seed under question and the locality where the seed is planted. The United States Department of Agriculture made an extensive survey in this connection and published detailed figures relative to it in the *Seed Reporter* for July and October, 1919. The following table gives percentages of each of five important classes of seeds that indicate the relative importance of the sources from which farmers in various geographical divisions obtain these seeds.

TABLE 1.—Normal sources of seed supply.

Group of States.	Grasses.			Clovers and alfalfa.			Millets.			Forage sorghums.			Small grains.		
	From own farm.	From other farms.	From dealers.	From own farm.	From other farms.	From dealers.	From own farm.	From other farms.	From dealers.	From own farm.	From other farms.	From dealers.	From own farm.	From other farms.	From dealers.
Eastern.....	P.ct. 5	P.ct. 2	P.ct. 93	P.ct. 6	P.ct. 3	P.ct. 91	P.ct. 3	P.ct. 1	P.ct. 96	P.ct. 1	P.ct. 0	P.ct. 99	P.ct. 44	P.ct. 12	P.ct. 44
Southern.....	6	4	90	11	5	84	12	6	82	36	13	51	45	15	40
Central.....	23	12	65	30	18	52	20	11	69	25	12	63	76	15	9
Northern.....	69	13	18	18	16	66	13	10	77	5	5	90	78	14	8
Far Western.....	4	2	94	12	9	79	7	3	90	16	18	66	59	15	26

PREPARATION OF SEED FOR MARKET.

THRASHING.

In view of the fact that there generally is a better demand and, of course, a higher price, for seed of fancy quality than for seed of inferior quality, it behooves the farmer to do whatever he can to improve the quality. Some of the factors commonly considered in determining the quality of seed are color, size, plumpness, and purity. Although climatic conditions at and subsequent to harvest time not under the control of the farmer may affect the quality of the seed, other factors, such as manner of thrashing and cleaning, that are more or less under his control may have even a greater effect upon quality. Except in regions where the production of a given kind of seed is large and special thrashing or hulling machines are available, the farmer usually has to rely on the common thrashing machine, possibly with some special attachments, for thrashing his seed.

Clover and grass seeds are generally considered more difficult to thrash than grain. The proper adjustment of concaves and air-control, and the selection of screens or sieves vary considerably with the kind and condition of the seed to be thrashed. In thrashing clover seed, the concaves should be so adjusted that all of the seeds are removed from the hulls, whereas in the case of timothy care should be exercised to prevent as much as possible the removal of the thin, papery-like hulls from the kernels, because timothy seed without the hulls normally sells at a lower price than seed with the hulls. In thrashing sorghums, broom-corn millet, and many other kinds of seeds the concaves should be as far from the cylinder as possible without allowing too much of the seed to pass unthrashed into the straw pile, otherwise many of the seeds may be cracked or broken, and subsequent thorough recleaning made impossible or expensive. Special seed recleaning attachments on thrashing machines are highly desirable and are not expensive and the farmer should en-

deavor to have them used. Sieves of the right size intended for small-seed cleaning purposes and adjusted properly, and careful regulation of the air-blast increase the effectiveness of the work done by the common thrashing machine where special machines are not available.

CLEANING.

About 75 per cent of the farmers who make a practice of producing seed in surplus quantities whenever climatic conditions are favorable

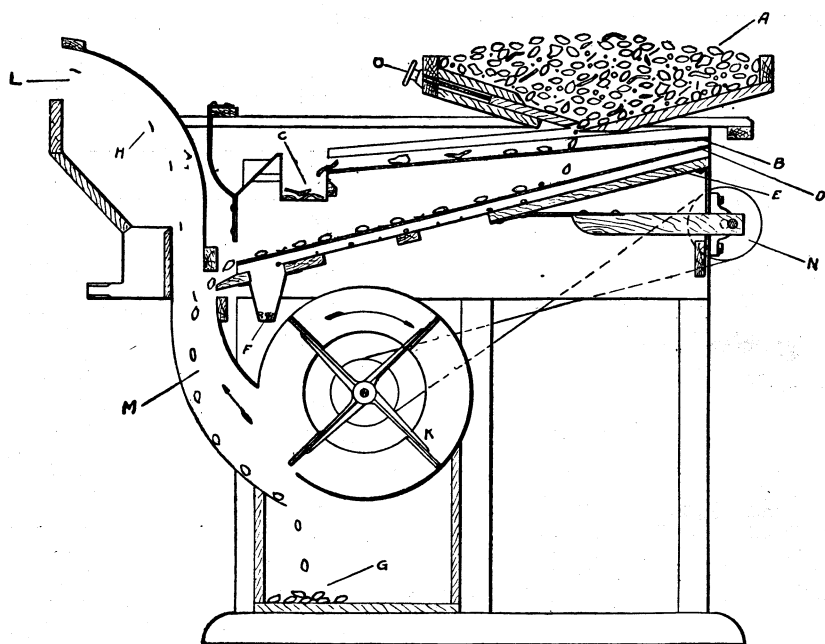


FIG. 1.—Seed-cleaning machine: A, Hopper filled with country-run timothy seed; B, coarse screen which is agitated back and forth longitudinally; C, straw-spout for carrying off straw, sticks, large weed seeds, etc., which are too long, wide, or thick to pass through coarse screen B; D, fine screen which is agitated back and forth longitudinally; E, pan onto which small weed and other small foreign seeds, sand, and other fine particles fall after passing through fine screen D; F, screenings-spout for carrying off fine material that falls on pan E; G, timothy seed which after passing over fine screen D drops to floor or box under fan K; H, dust, chaff, and light shriveled seeds that are blown out through dust hood L by the draft of air from fan K; K, fan for separating chaff and light foreign seeds from timothy seeds as they drop from fine screen D to air shaft M; L, dust or chaff hood; M, air shaft; N, eccentric for giving end or longitudinal shake to the two screens, thereby aiding in the cleaning of the seed; O, adjustment for regulating the flow of seed from the hopper.

clean the seed before selling it. A much smaller percentage of the farmers who seldom produce surplus quantities clean their seed. The cleaning, if any, that the average farmer gives his seed merely removes dirt, chaff, and weed and other foreign seeds that are much larger or smaller or much heavier or lighter than the kind of seed that is being cleaned. Such seed must be recleaned by the seedsman before being offered for sale. Although it would be impracticable for a farmer to

maintain a battery of cleaning machines as many seedsmen do, it would seem advisable for more farmers in the grass and clover seed producing sections to own either individually or jointly a seed-cleaning mill. An efficient one can be bought for \$40 to \$50, including a set of screens. Figure 1 illustrates a type of mill that is simple and well adapted for cleaning grass and clover seeds; it may also be used for cleaning corn, wheat, oats, etc., by means of different combinations of screens and changes in the adjustment of the air-control.

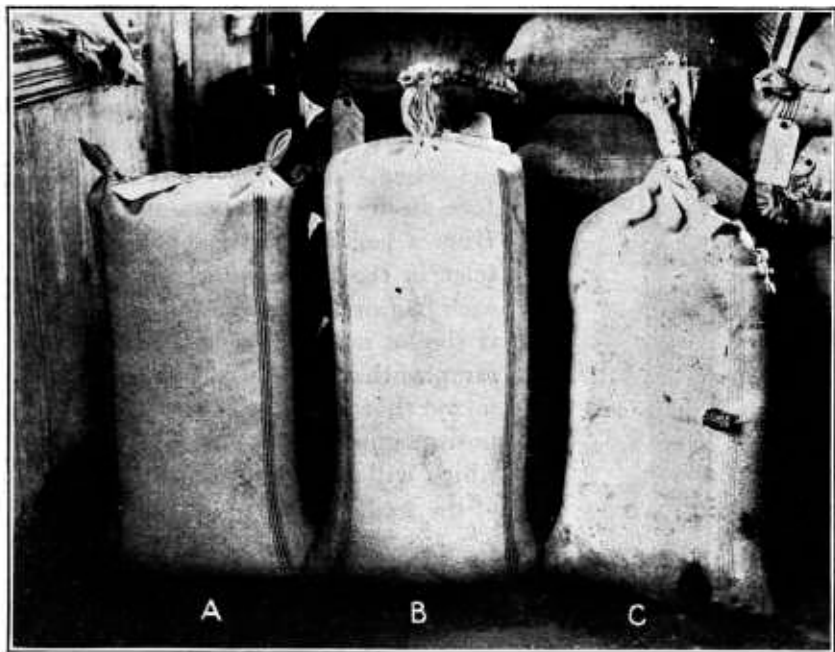


FIG. 2.—Properly and improperly tied bags.

SACKING.

The attractiveness of the package or container adds much to the salability of an article. The progressive seedsman realizes this and generally uses new, 16-ounce, 2-bushel cotton bags of some standard make for grass, clover, and vegetable seeds. The top of the bag should be sewed instead of tied. Unless the sewing is done by machinery a curved bag-sewing needle costing 5 or 10 cents is used. Whenever second-hand bags are used considerable care is exercised in patching or sewing up all holes, and if the bag is tied, it usually is done in two places. Seed is too frequently shipped in damaged bags, the larger holes being stopped up by corn cobs, sticks, wads of paper, etc., or the cloth around the hole gathered up and tied. A hand-sewed (A) and a properly tied bag (B), together with one that is tied improperly (C), are illustrated in figure 2.

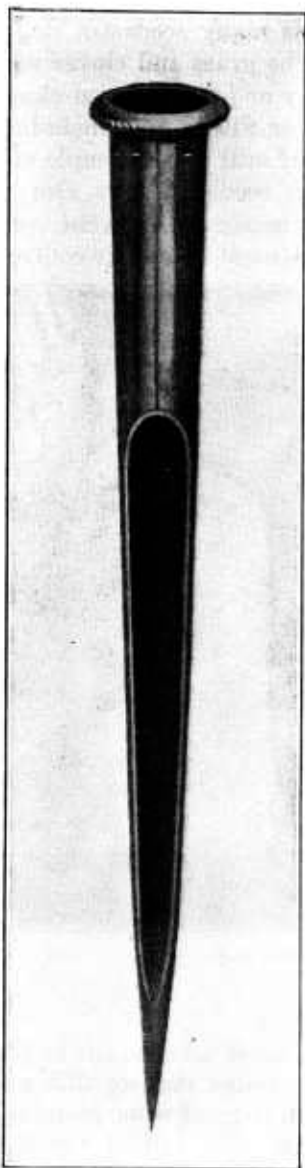


FIG. 3.—Seed trier or sampler.

A 5 or 6-inch trier costs about \$1.50, and if carefully used will not injure a cotton bag. The trier is inserted its full length into the bag with the large open end of the trier inclined downward so that the seed will run out of the trier. When enough seed has been obtained for a sample the trier is pulled out and the small opening in the bag is closed easily by drawing the point of the trier lightly across the opening a few times.

SAMPLING.

In obtaining samples of seed offered for sale or for which a purity or germination test is desired, an inexpensive handy device, known as a seed trier or sampler and illustrated in figure 3, facilitates the work considerably. A sample should represent accurately the bulk of the seed from which it is taken. During shipment, or even after standing for any length of time, the smaller and heavier seeds show a tendency to work downward in the bag, bin, or other container. Therefore, in drawing a representative sample from a bag it is advisable to insert the trier in the top, middle, and bottom of each bag or in multiples of 5 or 10 bags, if the lot is a large one. The successive samples that have been drawn should be mixed thoroughly so that a smaller composite sample may be obtained therefrom which will represent accurately the bulk of the seed sampled.

TESTING.

The farmer should test his seed, or have it tested, for purity and germination whether it is offered for sale or used on his own farm. In making a purity test it is customary to determine the percentage of (1) pure seed, (2) inert matter such as dirt, chaff, and broken seeds, and (3) foreign seeds, including weed and other seeds. A sample varying in weight from 1 to 100 grams or more (a teaspoonful for the clovers and small-seeded grasses, a tablespoonful for the grass seeds, and a considerably larger amount for cereal grains), depending upon the size of the seed being examined, is usually taken. In making a germination or viability test to determine the percentage of seeds that will grow, usually two lots of

100 seeds each are placed on or between blotting paper, Canton flannel, etc., and kept in a room or chamber at a temperature of 60° to 80° F. for 3 to 28 days, depending upon the kind of seed being tested.¹

Samples for purity and germination tests may be sent to the Seed Laboratory of the Department of Agriculture at Washington, D. C., or to the nearest Branch Seed Laboratory located at the following points, Lafayette, Indiana; Columbia, Missouri; Corvallis, Oregon; and Sacramento, California.

TAGGING.

Every lot of seed should be tagged or labeled immediately after thrashing to distinguish it from other lots of a different variety, strain, quality, etc. Space should be provided on one side of the tag for recording the purity and germination tests, and such other information as is necessary or desirable, and on the other side for the name and address lines of buyer and of grower. Some States require only a statement of the kind and purity of the seed, together with the name and address of the vender. If the grower is certain that he will not offer his seed for sale outside his own State, it is not necessary for him to provide space for more information than is required in that State. Information regarding the requirements of the various States may be obtained upon application to the State Experiment Station or State Board of Agriculture. In order, however, to make the tag as adaptable as possible for use in all States without increasing the cost materially, space should be provided for stating the percentages of pure seed, inert matter, and foreign seed; names and number or percentage of noxious weed seed; germination percentage, date of germination test; State or county where seed was grown, and the year when grown. A suggested form of tag which would comply with the tagging or labeling requirements of practically every one of the 47 State seed laws² is illustrated in figure 4.

STORING.

Some seeds such as corn and certain vegetable seeds usually must be cured or dried, either naturally or artificially, before they may be stored safely. In general any kind of seed that contains a high percentage of moisture when harvested will mold and deteriorate in germination if allowed to remain undisturbed in a deep pile without

¹ The manner of conducting these tests is explained fully in U. S. Department of Agriculture, Farmers' Bulletin No. 428; Testing Farm Seeds in the Home and in the Rural School; Department Circular 406; Rules for Seed Testing. Revised 1930.

² Up to February 25, 1932, every State except Georgia had a seed law.

free access of air. The stage of maturity of the seed when harvested, moisture content when stored, and ventilation of the building where stored must be carefully considered preparatory to storing seed. Many farmers find it profitable to place their seed corn on racks or suspend it on wire hangers so that the ears do not touch one another, and further to facilitate drying by means of stoves, fans, or air ducts. The interior of a farmer's seed corn drying house is shown in figure 5.

Kind.....	For.....
Lot No.....	Ship to.....
Purity.....%	County.....
Inert Matter.....%	State.....
Weed Seeds.....%	From
Noxious Weeds.....	Grandview Farm
.....	Oakwood, Illinois.
Germination.....%	
Date of test.....	
Grown in.....	

FIG. 4.—Seed tags (front and back), two-thirds natural size.

Unless a farmer wishes to engage extensively in the business of seed production, it probably would not pay him to erect a special seed house. Usually there are one or more buildings on the farm which are suitable for storing seed. A dry, well-ventilated place such as a granary should be chosen and the seed, if in bulk, should not be piled too deep. In most cases it probably is advisable to store seed in bags piled neatly with the lowermost layer raised off the floor by strips of wood. Precautionary measures should be taken against rodents, and if many weevil or other insects are working in the seed it may be advisable to fumigate with carbon disulphid or other suitable fumigants.³

³ See U. S. Department of Agriculture, Farmers' Bulletin No. 799; Carbon Disulphid as an Insecticide, and Farmers' Bulletin No. 1483; Control of Insects in Stored Grain.

SELLING SEEDS.

WHERE TO SELL.

The farmer who has produced a surplus of seed may sell it to any one of the following: (1) His neighbors, (2) other farmers through advertising, correspondence, etc., (3) local shippers, (4) traveling seed buyers, (5) distant seedsmen by mail, and (6) by advance growing contract. In reply to questionnaires sent out by the Department



FIG. 5.—Interior of seed-corn drying house.

of Agriculture, 2,400 growers scattered throughout the United States submitted data which are summarized in Table 2.

TABLE 2.—Percentage of growers using various agencies in selling seeds.

Agency.	Clovers.	Grasses.	Millet.	Sorghums	Peas and beans.	Potatoes.	Seed grains.	Seed corn.	Cotton seed.
	<i>P.ct.</i>	<i>P.ct.</i>	<i>P.ct.</i>	<i>P.ct.</i>	<i>P.ct.</i>	<i>P.ct.</i>	<i>P.ct.</i>	<i>P.ct.</i>	<i>P.ct.</i>
Neighbors.....	38	41	38	39	40	42	46	45	39
Other farmers.....	13	8	12	16	14	15	17	23	25
Local shippers.....	24	25	30	27	22	24	21	16	20
Traveling seed buyers.....	8	8	2	5	3	7	3	2	2
Distant seedsmen.....	15	17	18	11	15	9	10	11	12
Advance growing contract.....	2	1	0	2	6	3	3	3	2

From the figures in Table 2 it is apparent that the farmer sells more of his seed to neighbors, but that he also sells considerable to the local shipper. Distant seedsmen by means of their traveling

buyers and correspondence buy large quantities of seed direct from farmers. Although probably most of the vegetable seeds are produced on advance growing contracts entered into between large commercial vegetable-seed growers and farmers located in more or less well-defined areas, only a small percentage of field seeds are disposed of by farmers in this way.

Which of these agencies can be used most profitably by the farmer in selling his seed is largely a local problem and varies somewhat from year to year. If one farmer alone in a neighborhood has produced a certain kind of seed in a given year, he probably will find it most advantageous to sell it to his neighbors or to a local dealer for resale in the community. On the other hand, if a considerable number of farmers in a locality have produced seed, and are not in the habit of doing so, they will have to look outside their immediate vicinity for an outlet and may find it feasible to pool their seed and sell it through their farm bureau, county agent, State marketing agent, or through the various channels used in other localities. In sections that usually produce a large surplus of certain kinds of seed, there frequently are two or more local shippers, who may or may not be acting as buying agents for a like number of seedsmen. The competition between them often results in the paying of higher prices than elsewhere. If the farmer believes that there is no actual competition between his local shippers, and that they are not paying as much as the seed is worth, it is advisable for him to submit samples, drawn in a manner already explained, to several seedsmen, including two or more who are not being represented by the local shippers, and to request bids on these samples. If a group of farmers have a carload or more of seed for sale they frequently can induce a distant seedsman to send a buyer to see the seed. Such a buyer is usually a good judge of seed values and is in a position to pay maximum prices for the quality offered.

Some farmers obtain good results from advertising in near-by county newspapers and in agricultural periodicals which circulate in sections of the country that consume relatively large quantities of the kind of seed offered for sale.

Various Federal and State publications, county newspapers, and agricultural periodicals publish current information relative to the supply, demand, movement, and prices of the important kinds of field seeds, when the principal movement of each kind from the farm is taking place. The farmer who makes use of this information has a better understanding of the worth of his seed and can cope with the dealer on more even terms than in the past, when the dealer was almost alone in his knowledge of what was going on in the seed markets.

WHEN TO SELL.

There is no one best time at which to dispose of seeds. The general rule of selling when the buyer is anxious to buy holds as true in seed transactions as in others. Ordinarily seedsmen are eager to buy seed as soon after thrashing as possible, especially if the carryover of that particular seed from previous years is less than normal; furthermore, there frequently is a good early demand for certain kinds that are sown in the fall as well as in the spring. Most large seedsmen buy the bulk of their grass and clover seed before February 1 and make purchases after that date to fill open orders or to replenish low stocks. Frequently higher prices may be received after February 1, but the grower runs considerable risk in not being able to dispose of his seed to seedsmen as late as that, and consequently of being compelled to carry it over until the next planting season or to sell it to some seedsman, who is willing to speculate on it, at a price usually considerably below current prices.

By keeping in touch with the published seed market information for the entire country and not focusing all of his attention on local conditions, which may be just the opposite from those prevailing elsewhere, the farmer can determine pretty well for himself when it is advisable to sell his seed.

HOW TO SELL.

It is customary for local shippers and seedsmen to pay cash for seed. The seed shipped should be equal in quality, and preferably identical, to the sample on which the sale has been based. If the seed, upon arrival at the seedsman's warehouse proves to be of decidedly inferior quality, it may be refused or discounted by the seedsman, especially if the market declines after the transaction. Therefore to minimize claims and to foster good business relationship between seller and buyer, extreme care in sampling should be taken and the seller and buyer should each retain samples, properly identified, for future reference in case of disputes.

The seed should be bagged and tagged properly, as already explained. If possible, the farmer should sell his seed f. o. b. (free on board), his station, so that any subsequent increases in freight rates, losses in weight, or damage to seed during shipment must be assumed by the buyer.

Most farmers prefer to sell their seed "as it stands," or "in the dirt" without having any dockage assessed, because it is easier for them to calculate what their returns will be and disputes over the amount of dockage are not so apt to arise. The seed buyer, however, in making his bid, takes into account either by actual test or by guess, which may be close or far off, dependent upon his training and ex-

perience, the amount of dockage (dirt, straw, weed and other foreign seeds), contained in the seed. Ordinarily the buyer pays little or nothing for the dockage, but deducts it from the weight of the seed. Instances have been recorded where the dockage was actually worth more than the pure seed purchased—for example, white clover seed screened from country-run redtop seed in the fall of 1916. If the dealer should offer a farmer \$15 per 100 pounds less 10 per cent dockage for a lot of red clover seed weighing (without the bags) 1,000 pounds, the total amount received by the farmer would be 1,000 pounds—100 pounds (10% of 1,000)=900 pounds at \$15 per 100 pounds=\$135. This offer on the lot would be \$5 better than an offer of \$13 per 100 pounds “as it stands” or “in the dirt” without dockage. The best way out of disputes arising over dockage is to clean the seed and not pay the freight, either directly or indirectly, on the screenings it contains. A further advantage accruing from cleaning seed over a good fanning mill is that the clean seed instantly presents a far better appearance to the buyer than trashy and weedy seed does and the buyer either consciously or unconsciously is influenced to pay more for it.

BUYING SEEDS.

GENERAL SOURCES.

There are more consumers than producers of seed. Many farmers produce enough seed to supply the needs of hundreds of other farmers. The average farmer, therefore, is more interested in knowing where to buy seed than in knowing where to sell it. The first source of supply to which he commonly looks is his neighbor or local dealer. He is more or less familiar with the character of the weeds on his neighbor's farm and usually prefers to plant home-grown seed. He knows the local dealer and feels that adjustments can be made if the seed is not satisfactory. Frequently, however, the farmer can obtain better seed at a lower cost from growers or shippers in surplus producing areas or from distant seedsmen.

In general, a heavy producing area of a particular kind of farm seed is also a heavy consuming area of that seed, and in most cases is the area in which relatively greater quantities are used than elsewhere. Many seedsmen fail to consider this fact and judge the total consumption of seed in various sections by their own sales of seed in those sections.

SURPLUS PRODUCING AREAS.

SEED GRAINS.

Normally, surplus quantities of seed grains, such as wheat, oats, barley, rye, speltz, etc., are produced in localities that are well adapted to their culture. The Northwestern, Central, Southwestern,

and North Pacific States contain localities that are usually able to make up the seed grain shortages in other localities within the same geographical divisions or elsewhere. This class of seed usually is not shipped so far from the region of production as grass and clover seed are because: (a) The soil and climatic conditions under which seed grains are grown are believed to have a marked effect upon the adaptability of such seed to withstand different growing conditions elsewhere, (b) seed grains are more bulky and a larger quantity of seed per acre is required than in the case of grass and clover seed, and (c) seed grains are easier for the average farmer to clean or have cleaned than grass and clover seed.

CLOVERS AND ALFALFA.

Grass and clover seed are produced in surplus quantities, for the most part, in the Central States and in a few of the States west of the Rocky Mountains. Because hay or green forage in the East is worth more than seed to farmers in that section and climatic and other conditions are not so favorable for profitable seed production as in Central and Western States, comparatively few counties in the Eastern States produce surplus quantities of grass and clover seed, except during occasional years when weather conditions are unusually favorable for seed production, seed prices are high, and forage is abundant.

In figure 6 the solid black dots indicate where surplus quantities of red clover seed normally are produced. The surplus producing areas of alsike clover seed coincide in general with those for red clover seed, except that they do not extend so far south in Indiana and Ohio, and include western New York.

White clover seed is produced in surplus quantities in only a few regions, though it is sown in almost every section of the United States. The main regions of production are in southeastern Wisconsin, southern Idaho, and scattered parishes in Louisiana. Some years considerable white clover seed is produced in the redtop section of southern Illinois and elsewhere. Its production is more or less sporadic and in a given year a surplus may be found in several States which ordinarily do not produce enough to satisfy their own requirements.

A surplus of crimson clover seed is normally produced in a few counties in southern Tennessee and Kentucky and in scattered localities in Delaware, Maryland, Virginia, North Carolina, South Carolina, and other Southern States. Until recent years, only a very small portion of the crimson-clover seed used in planting has been grown in this country, most of it being imported.

Sweet clover grows wild in many States, but the production of seed on an important scale occurs chiefly in the Dakotas, Minnesota, Montana, Colorado, Kansas, Nebraska, Illinois, and Iowa.

The use of alfalfa has been extended gradually until it is being grown in practically every State in the Union. The production of

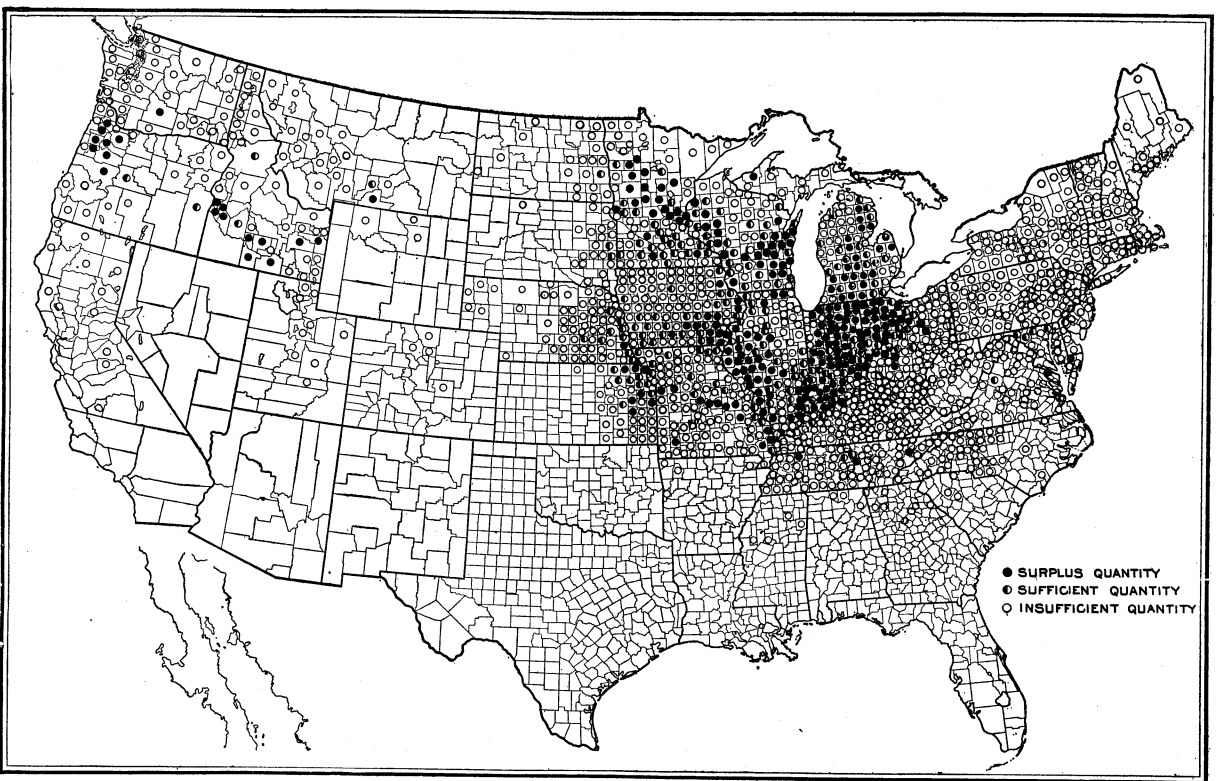


FIG. 6.—Red clover seed map.

Counties reported as normally producing either a surplus quantity, a sufficient quantity, or an insufficient quantity of seed compared with planting requirements.

alfalfa seed is confined largely to regions west of the Mississippi, where the precipitation at the time the crop sets seed is very light. Figure 7 indicates the regions of heaviest alfalfa seed production,

together with other regions that normally depend upon seed from outside to take care of their sowing requirements.

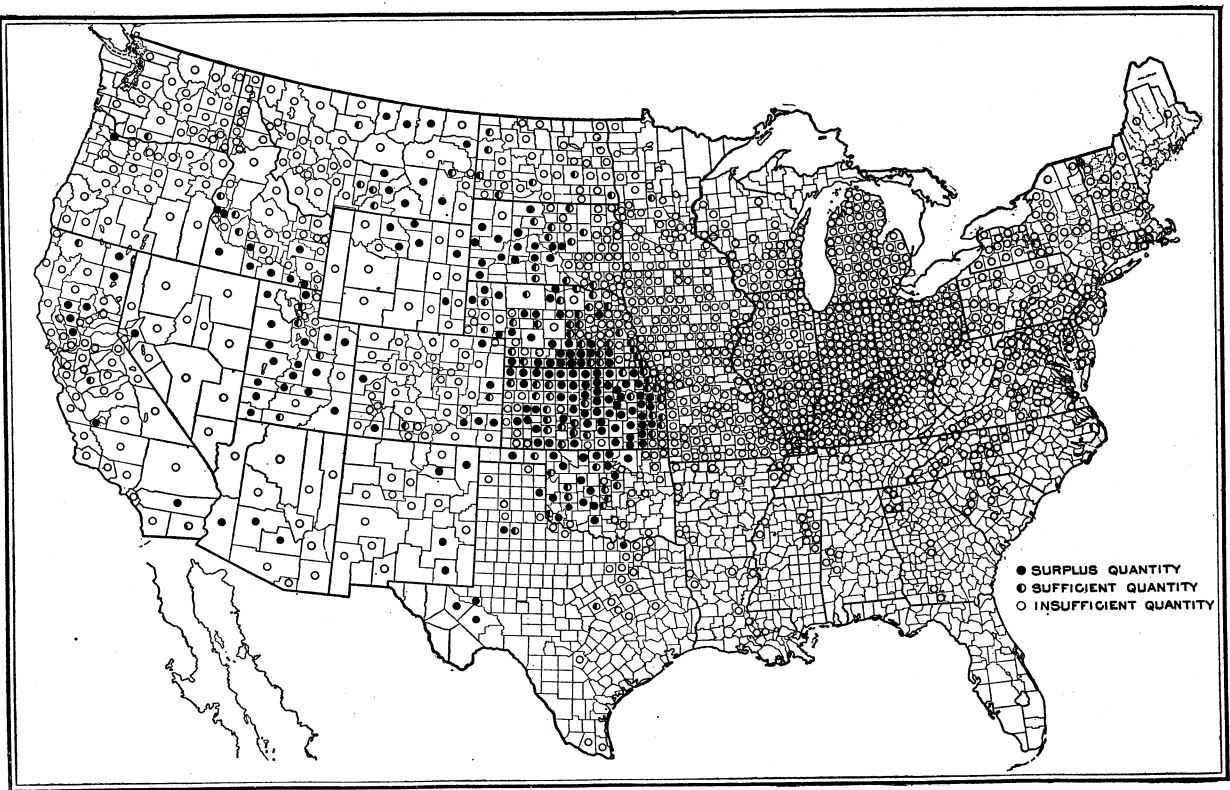


FIG. 7.—Alfalfa seed map.

Counties reported as normally producing either a surplus quantity, a sufficient quantity, or an insufficient quantity of seed compared with planting requirements.

Common lespedeza or Japan clover has been grown for many years in the Southeastern States. Since about 1932, however, another

annual lespedeza, Korean, has become very popular. Kobe and Tennessee 76, which are varieties of common lespedeza, and *Lespedeza sericea*, a perennial, have also come into prominence in recent years. Korean lespedeza is produced chiefly in Tennessee, Kentucky, North Carolina, and Virginia, but also in Illinois, Missouri, Arkansas, etc. Bur clover is used in relatively small quantities. The seed is produced in California and the Southern States.

GRASSES.

The solid black dots in figure 8 indicate the regions normally producing a surplus of timothy seed. It will be noted that the sowing of timothy seed is confined to the northern two-thirds of the United States.

Practically all of the redtop seed that supplies the demand in this country, as well as in Europe, is produced in southern Illinois. Some redtop cleaned from timothy seed produced in southern Iowa and Minnesota finds its way into the market, but the quantity thus obtained usually is commercially unimportant.

Orchard grass is not very widely grown, and the areas of surplus production are situated in a few counties of northern Kentucky and southern Indiana and in several isolated counties in Ohio, Virginia, Missouri, and Arkansas.

Kentucky bluegrass seed is the main constituent of most lawn grass seed mixtures in the northern half or two-thirds of the United States. Most of the seed comes from northern Kentucky, northwestern Missouri, western Iowa, and eastern Nebraska, where special machinery for harvesting the seed has been introduced.

Meadow fescue or English bluegrass seed is produced in surplus quantities in eastern Kansas and to a much lesser extent in western Missouri and southern Indiana. Smooth brome grass (*Bromus inermis*) seed production is confined mostly to scattered areas in North and South Dakota, Minnesota, Idaho, Oregon, and Washington. Bermuda grass seed is produced mostly in Arizona and California, while Johnson grass seed is grown in a number of Southern States, principally Texas, Louisiana, and Mississippi.

MILLETS.

Millets are grown mostly east of the Rocky Mountains and in many sections they are used chiefly as a catch crop to take the place of a crop that has failed. For this reason the acreage of millet in a given section is subject to considerable variation from year to year. Figure 9 indicates the regions in which German millet normally is grown, and also the particular sections that normally produce more German millet seed than is necessary to meet their planting requirements. Common millet is grown in the same regions as German millet, but the surplus producing counties appear to be somewhat more extensive,

although the total annual production of common millet seed probably is not so large as that of German millet. Siberian millet is grown somewhat north of the German and common millet areas, and the

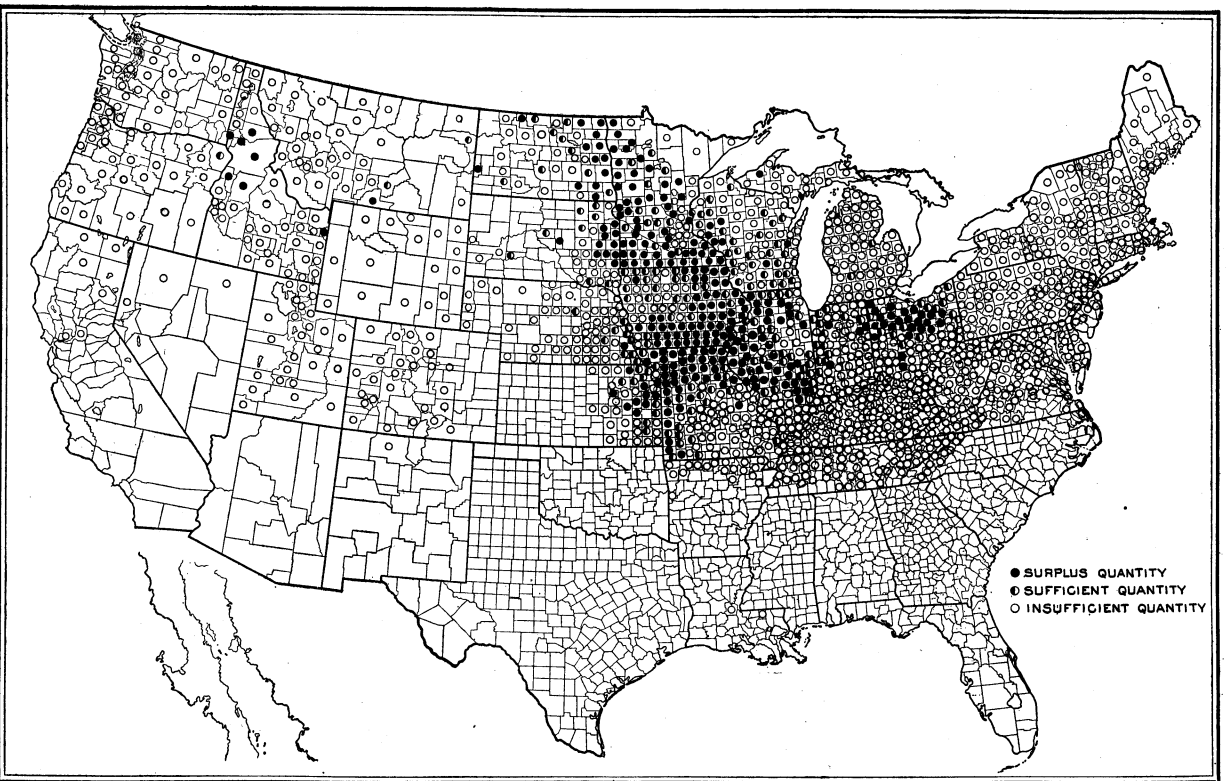


FIG. 8.—Timothy seed map.

Counties reported as normally producing either a surplus quantity, a sufficient quantity, or an insufficient quantity of seed compared with planting requirements.

surplus seed-producing areas of this variety are confined to the States west of the Mississippi River and east of the Rocky Mountains from Kansas northward to North Dakota, also in scattered counties of

Oklahoma, Texas, and New Mexico. Comparatively larger quantities of Japanese millet seed are used in the North Atlantic and East Central States than of Siberian millet seed. Commercial supplies

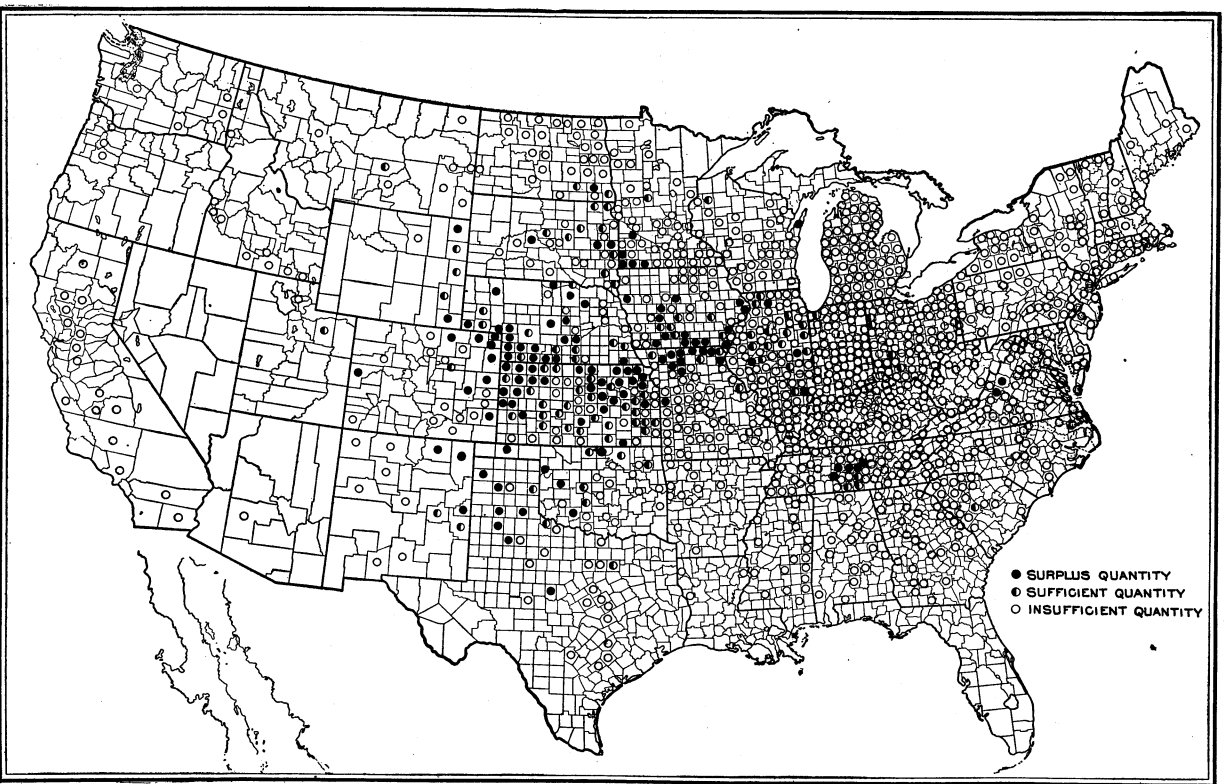


FIG. 9.—German millet seed map.

Counties reported as normally producing either a surplus quantity, a sufficient quantity, or an insufficient quantity of seed compared with planting requirements.

are produced principally in Iowa, Nebraska, Pennsylvania, and New York, but occasionally other States have a shipping surplus. Broom corn millet or hog millet seed is grown more largely for feeding

purposes than any of the other millets. Colorado, South Dakota, and North Dakota have been the leading States in the production of this variety of millet during the past few years.

SORGHUMS.

In some respects the marketing of grain sorghum seed is similar to that of small grains. In general grain sorghum seed is obtained in the same State in which the crop is to be planted. There are many kinds and varieties of grain sorghums, but only a few are of much commercial importance. Southwestern Kansas, western Oklahoma, and western Texas usually contribute most of the kafir and feterita used for planting purposes, and together with California, most of the milo.

Grain sorghum seed is used mostly for feed or food purposes, whereas forage sorghum or sorgo seed is used mostly for planting purposes. No attempt will be made to enumerate the many kinds and varieties of sorgos, or "cane" seeds commonly referred to by seedsmen. Figure 10 showing the surplus and consuming counties of amber sorgo seed will also afford the reader a good idea of the principal orange sorgo producing regions, as the two areas coincide for the most part. In the outlying northern localities of the forage-sorghum seed areas, more of the amber sorgo is used than of all the other kinds of sorgos combined; in fact, in Minnesota, Wisconsin, and South Dakota there is almost no demand for orange sorgo. Sumac or redtop sorgo is grown in many of the States that grow amber and orange sorgo, but not nearly so extensively. The surplus sumac sorgo seed producing area does not extend so far north as that of amber or orange sorgo.

Sudan grass, which belongs to the sorghum family, is being grown generally throughout the southern two-thirds of the country. The surplus seed producing counties are widely scattered except in portions of Texas, Oklahoma, Kansas, Colorado, and New Mexico, where they are rather consolidated, as shown in figure 11.

PEAS AND BEANS.

Canada field peas for seed purposes are grown principally in northern Michigan, Wisconsin, western Montana, south central Colorado, northern and southeastern Idaho, and northwestern and eastern Washington. In addition to these peas other kinds, such as marrowfats, Scotch, and Alaskas, are produced largely in the same sections.

Cowpea seed is produced chiefly in the Southern States, from Virginia to Texas, although some early varieties are grown in Indiana, Illinois, and Missouri. The crop is grown rather extensively for for-

age and grain purposes over the eastern half of the United States, as shown in figure 12.

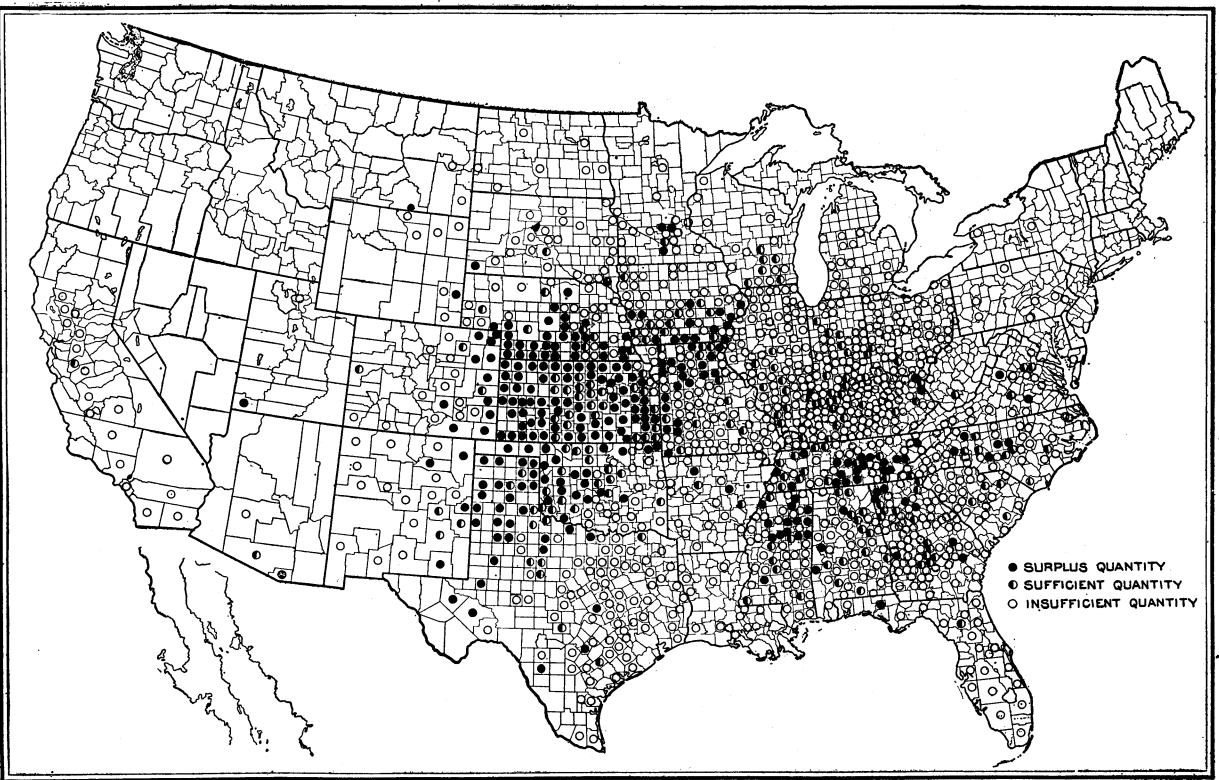


FIG. 10.—Amber sorgo seed map.

Counties reported as normally producing either a surplus quantity, a sufficient quantity, or an insufficient quantity of seed compared with planting requirements.

The soy bean crop is grown in much the same area as cowpeas, but farther north. At the time data for figure 13 were obtained, eastern North Carolina produced the larger portion of the commercial sup-

ply. Since then, however, the area of production has expanded westward and northward. In recent years the production in that

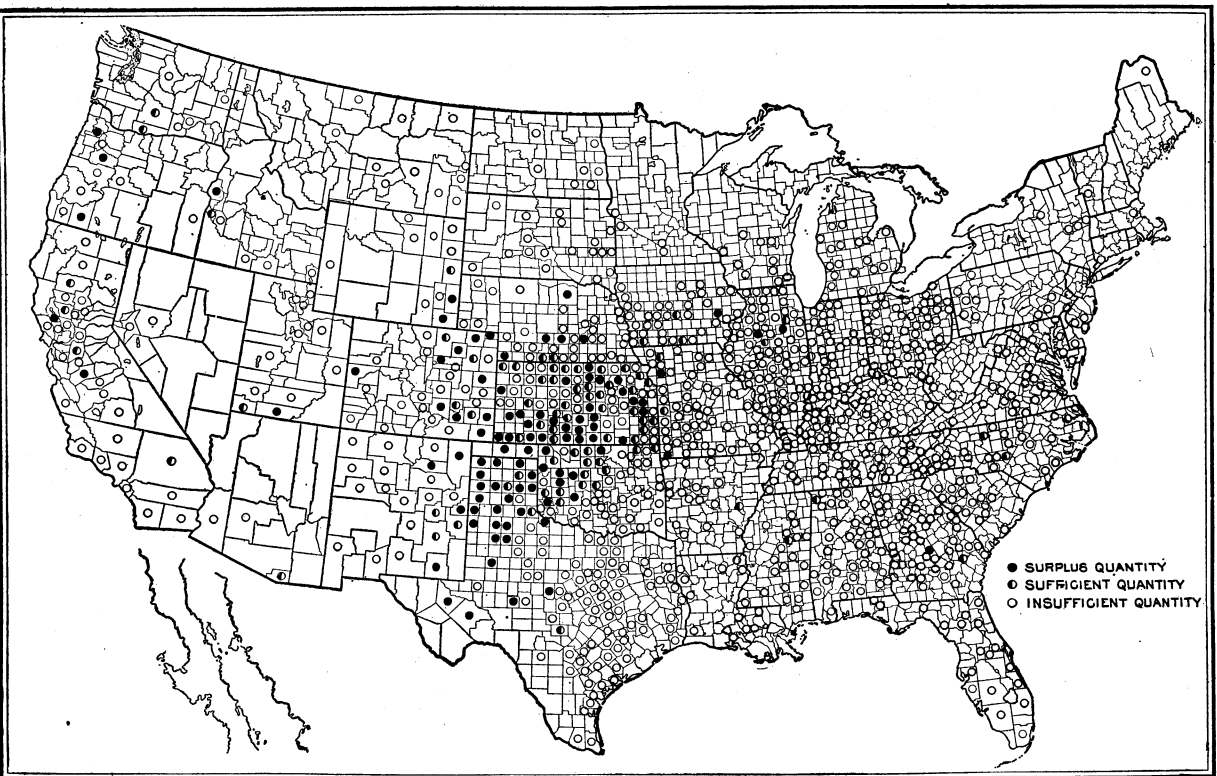


FIG. 11.—Sudan grass seed map.

Counties reported as normally producing either a surplus quantity, a sufficient quantity, or an insufficient quantity of seed compared with planting requirements.

State has been exceeded by that in Illinois and closely pressed by that in Missouri. Indiana and Ohio have ranked next to these States in the quantity of soy beans harvested.

SEEDSMEN.

Although large savings can at times be effected by buying seeds direct from growers and shippers in the surplus producing areas that

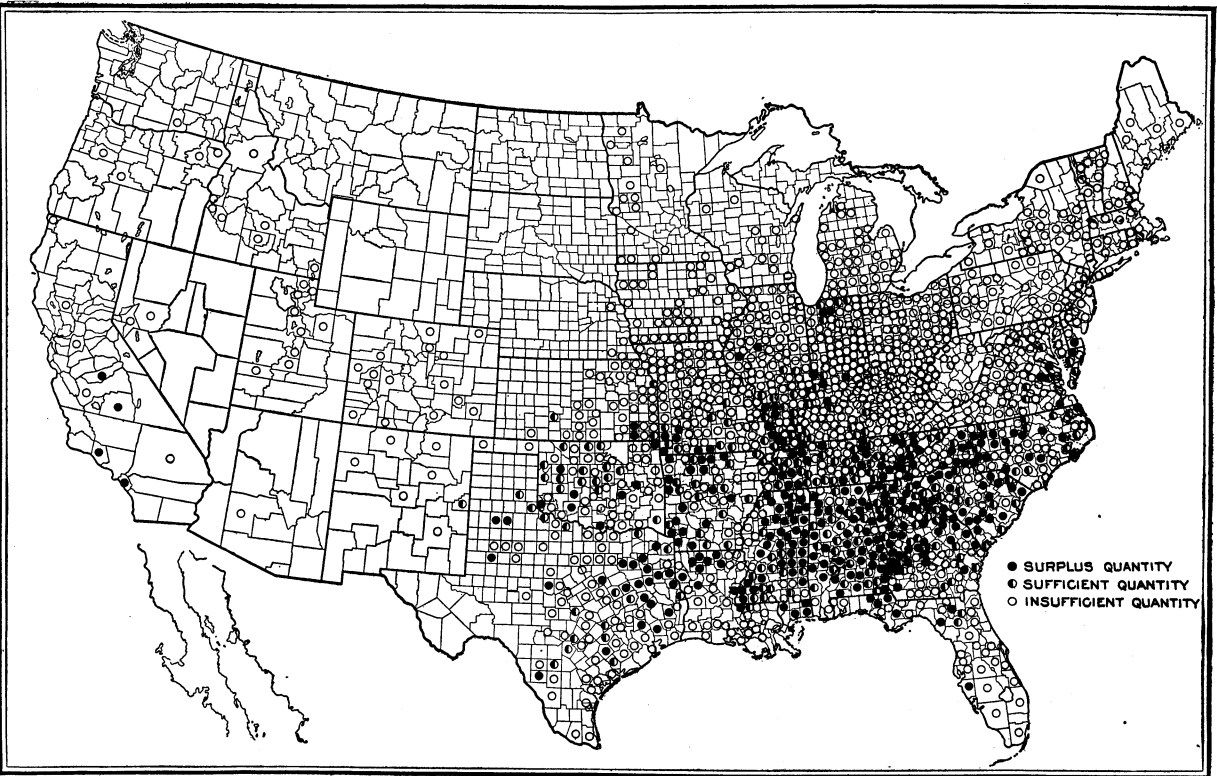


FIG. 12.—Cowpea seed map.

Counties reported as normally producing either a surplus quantity, a sufficient quantity, or an insufficient quantity of seed compared with planting requirements.

have been mentioned above, many farmers prefer to purchase seed from mail-order seedsmen, who are usually located at important distributing points. Theoretically, timothy seed should be bought from

a seedsmen in or adjacent to the timothy seed producing section; alfalfa seed from a seedsmen in the alfalfa seed producing section; and Kentucky bluegrass seed from one in the Kentucky bluegrass seed

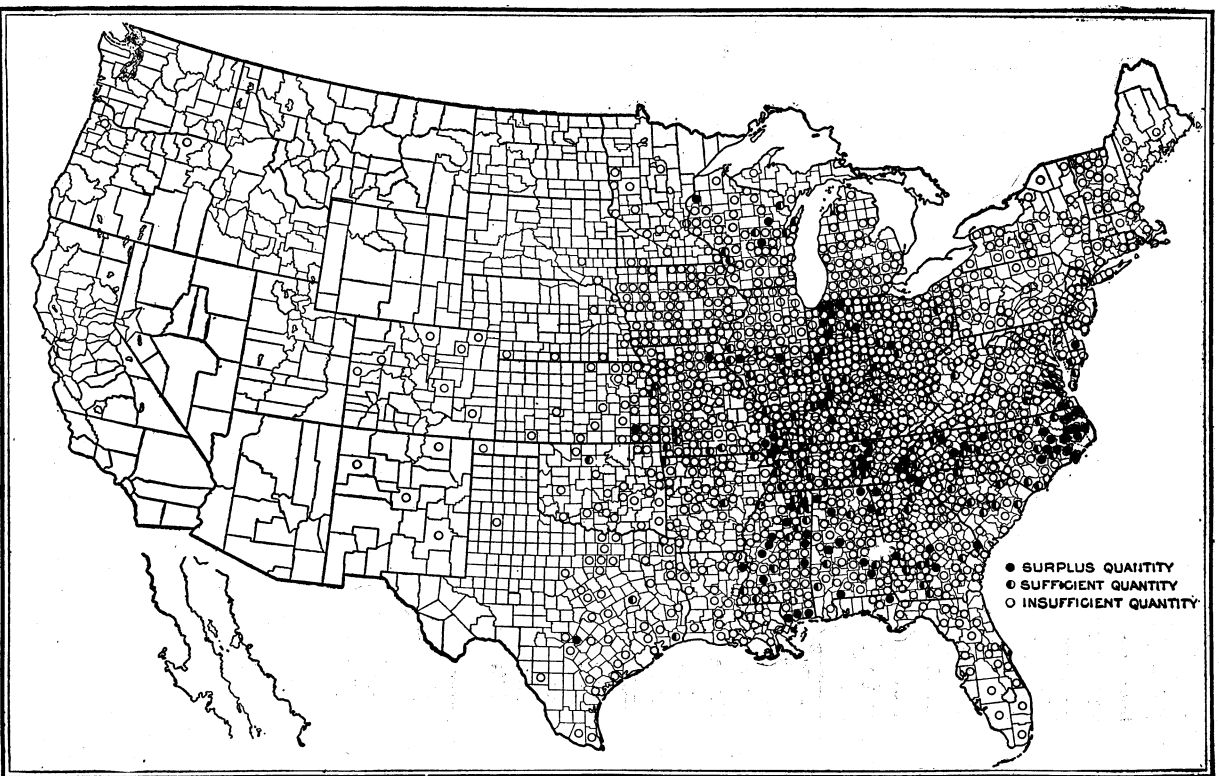


FIG. 13.—Soy bean seed map.

Counties reported as normally producing either a surplus quantity, a sufficient quantity, or an insufficient quantity of seed compared with planting requirements.

section. But in practice this usually would necessitate placing orders with a number of seedsmen and would not permit of any discount or better prices that might be obtained if the several orders were con-

solidated into one or two large orders. If a farmer does not have time or wish to go to the trouble of writing to several seedsmen for samples and prices, it often is practicable for him to buy from that seedsman who is most advantageously located with respect to the producing area of the main kind of seed which is wanted. It frequently happens, however, that seedsmen distantly removed from producing sections offer seed at lower prices than others, because of having made their purchases at opportune times and in large quantities, or being overstocked they may wish to close out some of their seed practically at cost. Hence it generally pays the farmer to "shop around a bit" if he has large purchases of seed to make. Although price is of importance, it should be secondary to quality, generally speaking. The farmer should not buy seed simply because it is cheap. It would be well for him to ask for samples and at the time of ordering to insist that the seed shipped be fully equal to or

Every Shipment Guaranteed Equal to Sample.

ALSYKE CLOVER

Extra Fancy Re-Cleaned Alsike----- \$16.50 bu.

Here is a real bargain in Clover Seed. This lot represents the cream of the crop. It doesn't grow any better. We purchased this lot early and we are going to give you the advantage of our early purchase. Don't delay ordering this lot, for you will be paying \$2.00 more a bushel for a poorer grade of seed before the end of the season. Order to-day. It's yours while it lasts, at \$16.50 a bushel.

FIG. 14.—Alsike Clover Seed Ad.

identical with the samples. He should test the seed or have it tested for purity and germination, as mentioned on pages 8 and 9. If there is any doubt regarding the business integrity of a certain seedsman, inquiries should be made locally, of the nearest experiment station, or of the United States Department of Agriculture for names and addresses of reliable seedsmen. Above all, he should not be misled by extravagant claims made by some seedsmen who are a discredit to the seed trade. An illustration of a claim which proved to be a gross misrepresentation is given in figure 14. The purity test (fig. 15) made by the seed laboratory of the department showed that the sample of "extra fancy re-cleaned" alsike clover under question purporting to be the "cream of the crop," contained only 54.76 per cent of pure seed, 2.99 per cent of inert matter, and 42.25 per cent of foreign seed. One-fourth of the sample was timothy seed, worth at the time only one-third as much as alsike clover seed. There was not

UNITED STATES DEPARTMENT OF AGRICULTURE, SEED LABORATORY, BUREAU OF PLANT INDUSTRY, Washington, D. C., April 24, 1919. G. C. EDLER, Bureau of Markets, Bieber Bldg. Report of purity test of seed received April 17, 1919.					
Test No.	Sender's mark.	Name of seed.	Per cent of pure seed.	Per cent of inert matter.	Per cent of foreign seed.
714667	SRS-13....	Alsike clover.....	54.76	2.99	42.25
<p>Pure seed includes all seed of the kind being examined. Inert matter includes broken seeds, dirt, stones, sticks, chaff, and other similar material. Foreign seed includes all seeds except those of the kind being examined.</p> <p style="text-align: center;"><i>Foreign seed includes the following.</i></p>					
Weed seeds.		Approximate number of seeds per pound of sample.	Per cent by weight.	Other seeds.	
		Approximate number of seeds per pound of sample.	Per cent by weight.		
Tumbling mustard.....		7,425	.....	Timothy.....	25.26
Sorrel.....		5,115	.....	Red clover.....	8.98
Night-flowering catchfly.....		2,310	.....	White clover.....	5.14
Lamb's quarters.....		2,145	.....	Poa sp.....	1,320
Black-seeded plantain.....		2,145	.....	Canada blue grass.....	495
Buckhorn.....		1,155	.....	Kentucky blue grass.....	330
Small seeded alfalfa dodder.....		990	.....	Alfalfa.....	165
Peppergrass.....		825	.....	Total.....	2,310
Cinquefoil.....		660	.....		.....
Witch grass.....		660	.....	
Plantain.....		495	.....	
Green Foxtail.....		495	.....	
Melilotus sp.....		495	.....	
Evening primrose.....		495	.....	
Rough pigweed.....		495	.....	
Subtotal.....		25,905	.....	
<p>In sowing this seed at the rate of — pounds per acre, — weed seeds, including — dodder seeds, would be sown on each square rod.</p> <p style="text-align: right;">E. BROWN, Botanist in Charge of Seed Laboratory.</p> <p>The name of the United States Department of Agriculture must not be used for advertising purposes in connection with this report.</p>					

FIG. 15.—Purity test of alsike clover seed sample.

sufficient space on the first page of the report reproduced in figure 15 to list all of the weed seeds found in the sample examined, and in addition to those listed there were 165 to 495 weed seeds per pound of sample of each of the following weeds: Small seeded false flax,

dock, mouse-ear chickweed, yellow trefoil, worm-seed mustard, sleepy catchfly, nerved manna grass, *Panicum sp.*, and *Syntherisma sp.* The total number of weed seeds in a pound of this "bargain lot" of alsike clover seed was approximately 28,215, including some noxious kinds that would prohibit its sale in a number of States.

In purchasing vegetable seed, the most important consideration is the reliability of the seedsman. Except to the trucker or farmer engaged extensively in the growing of a crop for a canning factory, a few cents per pound or even per ounce in the price of vegetable seed is insignificant because of the small quantity required by the average farmer. The location of a seedsman has but little bearing on the area from which he obtains most vegetable seeds because the bulk of these seeds is produced in comparatively few rather well-defined sections, as shown in maps published in the Seed Reporter, (United States Department of Agriculture) for November, 1918. For example, if domestic-grown carrot or celery seed is purchased the chances are more than 10 to 1 that the seed was grown in California regardless of whether it comes from a seedsman in the North, South, East, or West. In vegetable seed the terms "northern grown," "dry-land," etc., are not so significant as in farm seeds, but nevertheless these or similar terms are frequently used by vegetable seedsmen.

WHEN TO BUY.

Because of fluctuations in seed prices it is difficult to determine when is the best time for the farmer to buy. To the price paid by the seedsman in the fall and early winter certain carrying charges might properly be added such as interest, insurance, storage, shrinkage, and overhead, accruing until the seed is sold in the late winter or early spring. Theoretically, then, the farmer who purchases in the fall avoids having to pay for these charges and therefore can buy his seed cheaper in the fall than in the spring. As a matter of fact, however, seed occasionally is cheaper in the spring at planting time than earlier. So many factors enter into the subject of seed prices such as carryover, current production, demand, general quality, weather conditions in the spring, transportation difficulties, exports and imports, and prices of other agricultural products, that they can not be discussed within the limits of this bulletin.

In view of the fact that seed prices are just as apt, if not more likely, to be higher at planting time than during the fall or winter, it would seem advisable for more farmers to buy their seed early, because usually the quality of the seedsmen's stocks early in the season is better than later, the seed that is obtained early is sure to be on hand when needed for sowing, and it may be tested thoroughly and replaced by other seed if found to be unsatisfactory. Of course, many farmers are unable to decide definitely in the fall or winter

upon the acreage that will be devoted to the various crops, and if they are able to reach a decision early, unusual weather conditions prevailing at planting time may upset their plans entirely. It is believed, however, that a much larger percentage of farmers undoubtedly could and should make their seed purchases earlier than they do at the present time.

WHAT TO BUY.

In seeds as in many other things the best is usually the cheapest. The real cream of the seed crop is generally comparatively small and sold out long before the planting season is over. The advantages in using the best brands or grades of seed are so obvious that some of them will simply be enumerated as follows: Less seed is required per acre, there are fewer weed and other foreign seeds, and stronger, healthier plants are generally produced at the outset.

The purity and germination tests of the best brand or grade of seed offered by a seedsman vary somewhat from year to year and even in the same season, depending upon climatic and other conditions prior to, at, and subsequent to harvesting and thrashing. The average tests for the best grade sold by the leading seedsmen in this country are shown in Table 3. In that table is also given the commonly accepted weight per bushel, because farmers in many sections still buy and sell seed on the bushel basis. The cental system of trading or the 100-pound basis is simpler and quicker, and disputes are avoided over the number of pounds that should be considered as a bushel of those kinds of seed for which various States have established different bushel weights.

TABLE 3.—Average purity and germination tests of best commercial grade of seed and commonly accepted weight per bushel.

Kind of seed.	Purity.	Germination.	Weight per bushel.	Kind of seed.	Purity.	Germination.	Weight per bushel.
	<i>Per ct.</i>	<i>Per ct.</i>	<i>Pounds.</i>		<i>Per ct.</i>	<i>Per ct.</i>	<i>Pounds.</i>
Red clover.....	99.4	92.4	60	Hungarian millet.....	97.5	92.4	48-50
Alsike clover.....	98.3	91.5	60	Japanese millet.....	96.4	88.9	32-35
White clover.....	96.9	90.8	60	Broom-corn millet.....	99.3	92.1	50
Crimson clover.....	98.2	91.2	60	Amber sorgo.....	97.9	88.2	50
Sweet clover (hulled)	98.9	89.6	60	Orange sorgo.....	97.9	88.5	50
Bur clover (unhulled)			10	Sumac sorgo.....	98.3	90.5	50
Lespedeza.....	93.9	82.1	25	Sudan grass.....	98.0	91.1	32
Alfalfa.....	99.5	91.4	60	Kafir.....	98.1	91.3	56
Timothy.....	99.6	93.5	45	Milo.....	97.7	91.2	56
Redtop.....	93.2	90.5	¹ 14	Feterita.....	97.9	91.1	56
Orchard grass.....	86.9	86.6	14	Rape.....	99.2	91.8	50
Kentucky bluegrass.....	83.0	78.3	² 14	Wheat.....	98.8	94.4	60
Bermuda grass.....	91.5	77.9	35	Corn (field).....	99.3	94.0	³ 56
Bromus inermis.....	87.7	91.8	14	Barley.....	98.2	93.5	48
Meadow fescue.....	97.8	91.2	22-24	Oats.....	98.6	95.0	32
Italian rye grass.....	97.9	83.5	24	Rye.....	97.8	91.8	56
Perennial rye grass.....	97.9	83.6	24	Flax.....	98.5	87.3	56
Hairy vetch.....	98.7	89.0	60	Buckwheat.....	98.6	92.7	48-52
Spring vetch.....	98.7	92.3	60	Cotton.....	98.0	85.0	30-32
German millet.....	98.8	92.9	50	Canada field peas.....	99.3	94.8	60
Common millet.....	98.0	93.5	50	Cowpeas.....	96.1	91.4	60
Siberian millet.....	97.9	92.7	50	Soy beans.....	98.7	93.8	60

¹ Fancy re-cleaned, solid redtop seed weighs 30 to 38 pounds, or more, per measured bushel.

² Fancy re-cleaned Kentucky bluegrass seed weighs 19 to 23 pounds, or more, per measured bushel.

³ Shelled.

HOW TO BUY.

Regardless of whether the farmer buys seed from his neighbor or local dealer, from growers or shippers in surplus producing areas, or from mail-order seedsmen, he should first obtain a representative sample of it and test it for purity and germination, or buy it subject to satisfactory tests. If found to be satisfactory he should insist that the seed shipped or delivered to him be fully equal to the sample on which his purchase was based. Waiting until the last minute to buy precludes this procedure but nevertheless does not affect the soundness of the advice. Furthermore, precautions should be taken to see that the seed is tagged in accordance with the State seed law. Though the intentions of a reputable seedsman may be of the best, mistakes will occur and a lot of seed will at times get mixed or deteriorate in a seedsman's warehouse. Practically all of the larger seedsmen and many of the smaller ones sell their seed with a disclaimer similar to the following:

"We give no warranty, express or implied, as to description, quality productiveness, or any other matters of any seeds, plants or bulbs we send out, and we will not be in any way responsible for the crop. If the purchaser does not accept the goods on these terms, he must notify us at once, and we will give instructions for the disposition of goods." Although some seedsmen camouflage this disclaimer by explanatory remarks or by using different words, the meaning generally is essentially the same. The farmer, therefore, should not conclude erroneously that a seedsman is unreliable because his tag, invoice, catalogue, or price list contains this disclaimer. Without attempting to discuss the arguments for the "seedsman's disclaimer" pro and con, the fact remains that reputable seedsmen stand back of their seeds and do not knowingly and willfully sell seeds that are unfit for planting purposes.

SUMMARY.

In the foregoing the importance of seeds to the farmer, the reasons for purchasing seeds, the sources from which he obtains them, the preparation for market given seeds by the grower, how and where the grower sells his seed, and where, when, and how the farmer-purchaser obtains seed have been discussed. It has been pointed out that the individual farmer may be a seller or buyer of seeds, or both. The success of the farmer seed seller depends largely upon the care exercised in proper thrashing, cleaning, sacking, sampling, testing, tagging, and storing of seed. He may dispose of

his seed to neighbors, other farmers, local dealers or shippers, traveling seed buyers, distant seedsmen, or by advance growing contracts. In general the profitableness of seed production is dependent upon seed supply and demand, quality, prices of other commodities, and the seller's ability to find the best outlet. The supply of most seeds usually equals or exceeds slightly the demand, but is not always economically and efficiently distributed. The supply of fancy quality and superior strain seed frequently, however, is insufficient to meet the demand.

The farmer who has to buy seed may purchase it locally from farmers or dealers, from traveling seed salesmen, from growers and shippers in surplus seed producing areas, or from mail-order seedsmen. The best time to buy varies from year to year and is influenced by many factors but there are some distinct advantages to be gained through early purchases. The farmer should obtain samples as well as prices from various dealers, if his purchases are large, and test the samples for purity and germination. He should insist that seed shipped to him be fully equal to the sample on which his purchase was made. The better grades should be bought and for his guidance a table of purity and germination percentages has been given. The cental system should be used more generally because of the advantages it offers over buying by the bushel. Much money may be saved by the farmer in intelligent seed purchases which in turn may lead, through the buying and planting of better seed, to larger returns from increased production on a smaller acreage.

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